

### 1. CHARACTERISTICS

**NORESTER® 5000** is a polyester resin specially formulated for the production of moulds according to infusion method.

- Polyester resin which cures at ambient temperature with the addition of MEKP (e.g. **Butanox M50 from Akzo**).
- A pre-accelerated and promoted resin.
- Low shrinkage, good surface appearance.
- The product is ready to use.
- Good curing.
- High rate glass.
- Good flowing.
- Good mechanical properties of the laminate achieved according to infusion method.

### 2. PROPERTIES OF THE LIQUID RESIN

Brookfield viscosity (23°C - sp2 - ISO 2555)	50 rpm : 280 - 320 cP
Specific gravity (ICON 012)	1.25 - 1.27 g/cm <sup>3</sup>
Gel time (ICON 002) (23°C - 1% MEKP on 100 g)	85 - 100 minutes
Peak temperature (23°C – 1% MEKP on 100g)	150 - 170°C
Non volatile content (ICON 003)	63 - 65%

### 3. MECHANICAL PROPERTIES OF THE CURED RESIN

Flexural strength * (ISO 178)	131.4 MPa
Flexural modulus * (ISO 178)	3.7 GPa
Tensile strength * (ISO 527)	72.3 MPa
Tensile modulus* (ISO 527)	1 GPa
Elongation at break * (ISO 527)	6.3%
Barcol hardness* (ASTM 2583)	30 after 24 hours

\*Test made on a laminate made of **GC 206** (600 microns), **NORESTER® 842** (1 mat 100 + 2 mats 300), **NORESTER® 5000** (1 multimat S450G500S450 + 1 Unifilo 450 g + 1 multimat S450G500S450 + 1 Unifilo 450 g + 1 multimat S450G500S450 + 1 Unifilo 450 g) realised according to the infusion process. The laminate has been post cured during 3 hours at 80°C. Glass content = 36%.

#### **IMPORTANT**

*All of the results obtained according to trials in our laboratory. However, we don't be responsible of manufactured parts with the resin **NORESTER® 5000**, if the application conditions specified are not respected.*

*It is imperative that the user must also ensure that his application and his process are appropriate for this product to be used. We hereby the conformity of our products with the above specifications. We cannot be responsible for any damage caused by misuse of this product or use of the product for an application not covered in the design.*

#### **4. RECOMMENDATIONS BEFORE USE**

As the **NORESTER® 5000** resin is a filled product, the user must absolutely well mix the resin for each new application before using it to have a homogenous product.

**When using for secondary laminations, the user must make sure that the level of adhesion obtained is suitable/corresponds to the final use of the parts.**

#### **5. PROCEDURE FOR MOULD PRODUCTION**

- **Application of the gel coat**

Apply 800µ of tooling vinyl ester gel coat **GC 206 / GC 207** with several thin layers from 150 to 200µ.

The gel coat must be applied at a temperature between 18 and 25°C and catalysed with Butanox M50 at a level between 1,5% and 2%.

- **Application of the barriercoat**

When the gel coat is well cured (for optimum conditions, wait at least 4 hours before starting lamination), laminate with vinyl ester resin **NORESTER® 842** as follows:

- 1 powder mat 100 g/m<sup>2</sup> and 2 powder mats 300 g/m<sup>2</sup> with a level of catalyst Butanox M50 between 1% and 2%, wet on wet. Before laminating, check that the temperature of the resin **NORESTER® 842** is between 18°C and 25°C.

- **Application of the tooling resin**

Make the infusion of the tooling resin **NORESTER® 5000** on the following day. Before infusion, make sure that the temperature of the resin, the mould and the room is between 18°C and 25°C.

Before every application it is important to mix the resin well for several minutes to ensure complete homogeneity.

To obtain optimum properties with the tooling resin **NORESTER® 5000**, we recommend a use in a workshop at a temperature between 18 and 25°C. A too low temperature would not allow the anti shrink additives in the resin to be activated. As well as a too high temperature would cause a significant reduction in the gel time leading to application problems with the **NORESTER® 5000**.

The percentage of catalyst must be between 1 and 1,5% (e.g. Butanox M50) in accordance with the weight of the resin **NORESTER® 5000** in order to achieve optimum curing of the resin.

- **Structure of laminate recommended for realization of infusion mould:**

- 1 multimat S450G500S450
- 1 Unifilo 450 g
- 1 multimat S450G500S450
- 1 Unifilo 450 g
- 1 multimat S450G500S450
- 1 Unifilo 450 g

Then we obtain a maximum thickness of nearly 18 mm (gel coat and vinyl ester layer included).

**NOTE: The regular and homogeneous whitening of the laminate ensures that the product is being used correctly.**

#### **6. RECOMMENDATION FOR DEMOULDING**

It is recommended to wait at least 24 hours before demoulding the part.

#### **7. PACKAGING**

Available in cans of 25 kg or in drums of 225 kg.

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#### **8. STORAGE CONDITIONS AND HANDLING**

Storage life: Resin **NORESTER® 5000** is stable for 3 months from date of production when stored in original closed packaging away from direct sunlight at a temperature between 15°C and 25°C.

It is the responsibility of the customer to assure that the product is used in good conditions overall before the date limitation mentioned on the keg.

This resin is subject to the Highly Flammable Liquids Regulation.

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